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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,096	02/08/2001	Shi-Tron Lin	B-4101 618582-4	5687

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EXAMINER

NADAV, ORI

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 12/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/779,096

Applicant(s)

LIN ET AL.

Examiner

ori nadav

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35, 37 and 38 is/are pending in the application.
- 4a) Of the above claim(s) 5-7, 11, 12, 15-30, 32 and 33 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 3, 4, 8-10, 13, 14 and 31 is/are allowed.
- 6) ☒ Claim(s) 2, 34, 35, 37 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 09 September 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on 9/9/2002. These drawings are approved by the examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 2 and 38 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Independent claims 1 and 34 recite a doped region of the first conductivity type electrically floated in a well. The phrase "electrically floated" means that the doped region of the first conductivity type has no external electrical connections. Dependent claims 2 and 38, respectively recite a capacitor coupled between a pad and the doped region of the first conductivity type. It is unclear how the doped region of the first conductivity type can be electrically floated in a well and at the same time be connected to a capacitor.

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Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 34-35 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Ham (5,903,420).

Regarding claim 34, Ham does not state whether the conductivity type of the substrate is an N type or P type. Both situations will be examined. Assume the substrate has an N conductivity type. Ham teaches in figure 6 and related text (column 3, line 57 to column 4, line 41) an electrostatic discharge protection circuit coupled between a first node Vss and a second node Vdd, comprising a substrate 20 of a first conductive type; a first doped region 48 and a second doped region 50 of a second conductive type formed in the substrate, the first and second doped regions being spaced apart enabling a channel region (under gate 27b) formed in between; a well region 22 of the second conductive type formed in the substrate; and a third doped region 46 of the first conductive type (note that the third doped region 46 can be an N or P conductive type (column 4, line 17)), electrically floated in the well region, wherein the first node Vss is electrically coupled to the first doped region 48 and the second node Vdd is electrically coupled to the second doped region 50.

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Regarding the claimed limitation of a first doped region and a second doped region of a second conductive type formed in the substrate, doped regions 48 and 50 are formed in well 24, which in turn is formed in the substrate. Therefore, doped regions 48 and 50 are formed in the substrate, as claimed.

Assume now that the substrate has a P conductivity type. Ham teaches in figure 6 and related text (column 3, line 57 to column 4, line 41) an electrostatic discharge protection circuit coupled between a first node Vdd and a second node Vss, comprising a substrate 20 of a first conductive type; a first doped region 44 and a second doped region 42 of a second conductive type formed in the substrate, the first and second doped regions being spaced apart enabling a channel region (under gate 27a) formed in between; a well region 24 of the second conductive type formed in the substrate; and a third doped region 46 of the first conductive type (note that the third doped region 46 can be an N or P conductive type (column 4, line 17)), electrically floated in the well region, wherein the first node Vdd is electrically coupled to the first doped region 44 and the second node Vss is electrically coupled to the second doped region 42.

Regarding the claimed limitation of a first doped region and a second doped region of a second conductive type formed in the substrate, doped regions 44 and 42 are formed in well 22, which in turn is formed in the substrate. Therefore, doped regions 44 and 42 are formed in the substrate, as claimed.

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Although Ham does not state that third doped region 46 is electrically floated, the third doped region 46 is not directly connected to any external connections, thus rendering it electrically floated.

Regarding 35, Ham teaches in figure 6 the first node Vss is coupled to the first doped region 48 through the well region 22 (the first situation), and the first node Vdd is coupled to the first doped region 44 through the well region 24 (the second situation).

Regarding 37, although Ham does not state that well regions 22 and 24, respectively, form a resistor element, well regions 22 and 24 form a resistor element because the current flowing in the well regions must have certain resistivity (see also figure 4 and column 2, lines 13-18).

Allowable Subject Matter

7. Claims 1, 3-4, 8-10, 13-14 and 31 are allowed over the references of record

Reasons for allowance

8. The following is an examiner's statement of reasons for allowance:

Avery (5,343,053) appears to be the closest prior art reference.

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Regarding claims 1 and 31, Avery teaches in figure 9 a circuit coupled between a power line 45 and the pad 47 (see figure 13), comprising: a resistor constructed by a well region 434 of a second conductivity type deposited on a substrate 430 of a first conductivity type, the resistor comprising a first end and a second end, the first end being a doped region 440 of the second conductivity type at least partially overlapping the well region and coupled to the pad; a first doped region 436 of the first conductivity type, electrically floated in the well region; and an electrostatic discharge protection component 442, 444 coupled between the second end 448 and the second power line 45. Avery differs from the claimed structure in not having the circuit being the second circuit of an output buffer which in turn comprises a first circuit coupled between a first power line and a pad; and the second circuit coupled between a second power line and the pad. The allowability at least in part resides in the above described structure having elements which are not disclosed in the prior art searched. Therefore, prior art do not teach or render obviousness the semiconductor structure, as claimed.

Response to Arguments

9. Applicant argues on pages 5 and 6 that a region is electrically floating when no DC power is coupled to the region.

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When a DC power is applied to a circuit, all the elements in the circuit are coupled in one way or another to the DC power. If the circuit comprises an electrically floating region, the region would be coupled to the DC power via other elements. Therefore, applicant's definition of a region being electrically floating when no DC power is coupled to the region is unclear. Furthermore, the specification does not include the definition that a region is electrically floating when no DC power is coupled to the region. Such definition is not well known in the art. It is known in the art, however, that a region is electrically floating when the region is not directly connected to any external connections.

10. Applicant argues on pages 6 and 7 that doped region 46 of Ham is not an electrically floating region, because doped region 46 is coupled to Vss through P well 22 or coupled to Vdd through N well 24.

Any electrically floating region in an electric circuit is always coupled to Vss or Vdd through other elements. The criteria for whether a region is an electrically floating region is whether the region is directly connected to any external connections. Ham teaches doped region 46 not being directly connected to any external connections, thus rendering it electrically floating.

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Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

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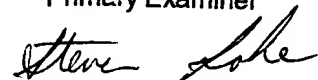
Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached at **(703) 308-2772**.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

Ori Nadav

May 22, 2002

Steven Loke
Primary Examiner

A handwritten signature in black ink, appearing to read "Steven Loke", written in a cursive style.